

SECTION 04300

UNIT MASONRY SYSTEM

PART 1 GENERAL

1.1 RELATED SECTIONS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.
- B. Section 01354 – LEED Credit Summary.
- C. Section 01355 – LEED Certification Procedures.
- D. Section 01356 – LEED Submittal Forms.

1.2 DESCRIPTION OF WORK

- A. Provide all labor, materials, equipment service necessary for the complete installation of unit masonry systems. Work includes that shown on the drawings and specified herein, including but not limited to the following:
 - 1. **Concrete Masonry units**
 - 2. **Brick units**
 - 3. **Architectural concrete masonry units**
 - 4. **Reinforcement and anchorage**
 - 5. **Mortar**
 - 6. **Flashing**
 - 7. **Accessories**
 - 8. **Masonry Insulation**
 - 9. **Masonry Cleaners**
 - 10. **Lintels**
 - 11. **Sealer**

1.3 QUALITY ASSURANCE

A. Submittals

- 1. **Product Data:** Provide data for masonry units, flashing, mortar, and fabricated wire reinforcement.
- 2. **Samples:** Submit samples of the following for verification:
 - a. Full-size units for each different exposed masonry unit required, showing the full range of exposed colors, textures and dimensions to be expected in the completed construction.
 - b. Color mortar samples for each color required, showing the full range of colors expected in the finished construction. Make samples using the same sand and mortar

ingredients to be used on the Project.

- c. Weep holes/vents in color to match mortar color.
- d. Accessories embedded in the masonry.

B. Regulatory Requirements

- 1. Conform to applicable code for UL Assembly Nos. specified on drawings for requirements for fire rated masonry construction.

C. Efflorescence Testing: The Contractor shall build a 16" x 8" x 8" panel of brick, block and mortar specified, and test assembly in accordance with ASTM C67. This is not a test which is performed in a lab, but a field test to be performed by the Contractor as noted below.

- 1. Partially immerse panel, with block face down, in $\pm 2"$ of water for 7 days. Allow assembly to dry and schedule observation by the Architect and Owner. Brick at this observation must be only slightly effloresced to be acceptable. Rating shall be performed by Owner and Architect. If assembly is rated as highly effloresced, then the assembly must be changed by Change Order (a change in the Contract). The Contractor shall work with the design team to select materials other than those specified, yet conforming to the performance data of the specifications to minimize cost impact on this project. The implications of the test specified will be to ensure that every precaution is taken to avoid efflorescence and afford the Owner the option to use alternate materials if those selected form an assembly which, when tested, is regarded to be highly likely to effloresce. The Contractor's responsibility is to test the materials in a timely manner, and aid the Owner in the selection of alternate materials should the assembly fail.
- 2. The Contractor must take all precautions necessary to avoid efflorescence in masonry work. Brick used will be in tested accordance with Methods C67 (described above) and shall be rated not more than "slightly effloresced". It is the Contractor's responsibility to ensure the mortar, brick and accessories used are compatible and do not represent a system which is highly likely to effloresce. Take all precautions necessary to avoid contact of water and salts to masonry and accessories. Store brick above ground covered with polyethylene. Store brick covered with polyethylene in dry well graded area. Conform to the construction practices described in the Brick Institute of America's Tech Note No. 23A.

D. Environmental Requirements

- 1. Cold Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
- 2. Hot Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Hot Weather Masonry Construction.

E. Testing: Owner shall appoint, employ and pay for services of an independent firm to perform inspection and testing. An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1093 to conduct the testing indicated, as documented according to ASTM E 548.

F. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.

- G. **Source Limitations for Mortar Materials:** Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source or producer for each aggregate.
- H. **Fire-Resistance Ratings:** Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by another means, as acceptable to authorities having jurisdiction.
- I. **Sample Panels:** Before installing unit masonry, build sample panels, using materials indicated for the completed work, to verify selections under sample submittals and to demonstrate aesthetic effects. Build sample panels for each type of exposed unit masonry assembly indicated on the drawings or, if not indicated on the drawings, in sizes approximately 48 inches long by 48 inches high by full thickness.
1. Locate panels in the locations indicated or, if not indicated, as directed by Architect.
 2. Clean exposed faces of panels with masonry cleaner indicated.
 3. Where masonry is to match existing, erect panels adjacent and parallel to existing surface.
 4. Protect approved sample panels from the elements with weather-resistant membrane.
 5. Maintain sample panels during construction in an undisturbed condition as a standard for judging the completed work.
 6. Approval of sample panels is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of workmanship; and other materials and construction qualities specifically approved by Architect in writing.
 - a. Approval of sample panels does not constitute approval of deviations from the Contract Documents contained in sample panels, unless such deviations are specifically approved by Architect in writing.
 7. Demolish and remove sample panels when directed.
- J. **Preinstallation Conference:** Conduct conference at Project site to comply with requirements in Division 1 Sections.
- K. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
1. Protect Type 1 concrete masonry units from moisture absorption so that, at the time of installation, the moisture content is not more than the maximum allowed at the time of delivery.
- L. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- M. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

- N. Deliver preblended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.
- O. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.4 SUSTAINABILITY REQUIREMENTS

- A. **MR Credit 5 – Regional Materials:** Provide products that have been extracted, harvested, or recovered as well as manufactured within 500 miles of the project site for a minimum of 20% based on cost of the total materials value.
 - 1. See Section 01355 for additional submittal requirements.
- B. **MR Credit 4 – Recycled Content:** Provide materials with recycled content such that the sum of post-consumer recycled content plus one-half the pre-consumer recycled content constitutes at least 20% based on cost of the total value of the materials in the project.
 - 1. See Section 01355 for additional submittal requirements.

1.5 PROJECT CONDITIONS

- A. **Protection of Masonry:** During construction, cover tops of walls, projections and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24" down both sides and hold cover securely in place.
 - 2. Where one wythe of multi-wythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24" down face next to unconstructed wythe and hold cover in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.
- C. **Stain Prevention:** Prevent grout, mortar and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and from mortar splatter by coverings spread on ground and over wall surface.
 - 2. Protect sills, ledges and projections from mortar droppings.
 - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

- D. **Cold-Weather Requirements:** Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg. F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
- E. **Hot-Weather Requirements:** Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required.
1. When ambient temperature exceeds 100 deg. F, or 90 deg. F with a wind velocity greater than 8 mph, do not spread mortar beds more than 48 inches ahead of masonry. Set masonry units within one minute of spreading mortar.

1.6 PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops the following net area compressive strengths (f'm) at 28 days. Determine compressive strength for masonry from net area compressive strengths of masonry units and mortar types according to Tables 1 and 2 in ACI 530.1/ASCE6/TMS 602.
- B. Provide unit masonry that develops the following net area compressive strengths (f'm) at 28 days. Determine compressive strength of masonry by testing masonry prisms according to ASTM C 1314.
1. For Concrete Unit Masonry: As indicated.
 2. For Brick Unit Masonry: As indicated.

PART 2 PRODUCTS

2.1 CONCRETE MASONRY UNITS

- A. **Hollow Load Bearing Block Units:** ASTM C90, Type I - Moisture Controlled, Grade N, rated no more than "slightly effloresced" when tested as described in 1.3.
- B. **Solid Load-Bearing Block Units:** ASTM C90, Type I - Moisture Controlled, Grade N, rated no more than "slightly effloresced" when tested as described in 1.3.
- C. **Concrete Brick Units:** ASTM C55, Grade N, Type I - Moisture Controlled of same Grade, Type, and Weight as block units, rated at no more than "slightly effloresced".
- D. **Size and Shape:** Size of 8H x 16L inches. Provide special units for 90 degree corners, bond beams and lintels. All corners, jambs and sill pieces to be bullnosed. All exposed faces to be 100% solid.
- E. **Integral Water Repellant:** Manufacture all units to be used on exterior walls, including block backup of veneer walls, with integral water repellant in accordance with manufacturer's recommendations. This includes CMU backup of veneer walls, including but not limited to block which services as backup to brick veneer and cultured stone.

1. Dry Block, W.R. Grace & Co.
2. Block Plus W, Addiment, Inc.
3. Dry Guard, Krete.

2.2 BRICK UNITS

- A. **Manufacturers/Suppliers:**
 1. See Drawings for brick colors and selections.
 2. Cushwa 30 Rose Full Range Modular Machine
- B. **Face Brick:** ASTM C216, Type FBS or better, Grade SW; color as specified by Architect; tested in accordance with ASTM C67 (described within), rated no more than slightly effloresced by the Architect.
- C. **Size and Shape:** Modular size as indicated on the drawings. Provide solid brick where indicated on the drawings and where required to ensure cores are not exposed at recessed or protruding brick.
- D. **Special Shapes:** Provide special shapes for base, jambs, corners, soldier course returns (corners) sills, etc., as shown on drawings and as required to ensure cores are not exposed. Contractor must anticipate some shapes required are not specifically noted on drawings but are required by this specification and drawings.

2.3 ARCHITECTURAL CONCRETE MASONRY UNITS

- A. **Products:**
 1. ASTM C 90, normal weight, Type 1. Color, manufacturer, texture and pattern as selected by Architect and Owner, and as indicated on the drawings.
- B. **Size and Shape:** As indicated on drawings. Provide all types indicated on drawings, including but not limited to split-face, ground-face, and double-ground and polished (Trendstone Plus) units. Provide specially designed concrete masonry units compatible with Kor-Fil Hi-R masonry wall system individually molded insulation inserts.
- C. **Special Shaped Units:**
 1. For lintels, corners, jambs, sash, control joints, headers, bonding and other special conditions.
 2. Where 4" wide units are used, L-shaped returns at all outside corners as required to produce an 8" long exposure.
 3. Where 8" or 12" wide units are used, corner units to have architectural finish on both exposed faces.
- D. **Integral Water Repellant:** Manufacture all units with integral water repellant in accordance with manufacturer's recommendations. Coordinate water repellant admixture used in mortar with water repellant admixture used in masonry units to ensure that the same product is used throughout.
 1. Dry Block, W.R. Grace & Co.
 2. Block Plus W, Addiment, Inc.
 3. Dry Guard, Krete.

2.4 REINFORCEMENT AND ANCHORAGE

A. **Single Wythe Joint Reinforcement:** Ladder type; steel wire, hot dip galvanized to ASTM A153, Class B-2 after fabrication, 3/16 inch side rods with cross ties.

1. Manufacturers:
 - a. National Wire Products.
 - b. Dur O Wal.
 - c. Hohmann & Barnard.

B. **Multiple Wythe Joint Reinforcement:** Ladder type; with moisture drip; steel wire, hot dip galvanized to ASTM A153, Class B-2 after fabrication, 3/16 inch side rods with cross ties.

1. Manufacturers:
 - a. National Wire Products.
 - b. Dur O Wal.
 - c. Hohmann & Barnard.

C. **Masonry Veneer Anchors:**

1. Masonry veneer shall be attached to the structural elements or to the backup construction by means of the POS-I-TIE Masonry Veneer Anchor System as supplied and in accordance with the recommendations of National Wire Products Corporation. This system shall include the following elements:
 - a. NWSD - A self-drilling steel fastener used for making connections through sheathing directly to metal studs, with a 3/8" x 3/4" galvanized steel washer with a Permaseal backing.
 - b. A steel barrel with an eye at the outer end that fits over the ends of the first three items and is used for turning them as well as for connection to item 3.
 - c. Triangular shaped, five gauge steel wire ties used to connect the masonry veneer to the steel barrels, furnished in mill galvanized finish.
2. Hohmann & Barnard Veneer Anchor
 - a. DW-10X Veneer.
 - b. Use with SX fastener manufactured by Stadler Companies.
 - c. Stainless steel.
 - d. Size leg length and tie length according to project requirements.
 - e. Provide X seal tape.
3. Approved equal.

All of the above elements shall be electro-galvanized for corrosion protection according to ASTM A153, B2.

D. **Reinforcing Steel:** ASTM A615, 60 KSI yield grade, deformed billet bars, uncoated finish.

- E. **Strap Anchors:** Bent steel shape, 3/16 inch thick, hot dip galvanized to ASTM A123.

2.5 MORTAR AND GROUT

- A. **General:** Provide pre-blended Silo Systems Type N, pigmented mortar and grout with water repellent admixture conforming to the following:
- B. **Portland Cement:** ASTM C 150, Type I or II, except Type III may be used for cold weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- C. **Hydrated Lime:** ASTM C 207, Type S or SA.
- D. **Portland Cement-Lime Mix:** Pre-blended Silo Systems packaged blend of portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207.
- E. **Mortar Cement:** ASTM C 1329.
- F. **Masonry Cement:** ASTM C 91.
 - 1. For pigmented mortar, use a colored cement formulation as required to produce the color indicated or, if not indicated, as selected from manufacturer's standard formulations.
 - a. Pigments shall not exceed 10% of portland cement by weight for mineral oxides. Carbon black is not allowed.
 - b. Pigments shall not exceed 5% of mortar cement by weight for mineral oxides. Carbon black is not allowed.
- G. **Aggregate for Mortar:** ASTM C 144; except for joints less than 1/4" thick, use aggregate graded with 100% passing the No. 16 sieve.
 - 1. White Mortar Aggregates: Natural white sand or ground white stone.
 - 2. Colored Mortar Aggregates: Natural colored sand or ground marble, granite or other sound stone; of color necessary to produce required mortar color.
- H. **Aggregate for Grout:** ASTM C 404.
- I. **Mortar Pigments:** Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance with masonry mortar.
- J. **Cold Weather Admixture:** Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494, Type C, and recommended by the manufacturer for use in masonry mortar of composition indicated.
- K. **Water:** Potable.
- L. **Products:** Subject to compliance with requirements, provide one of the following:
 - 1. Colored Portland Cement-Lime Mix:
 - a. Lehigh Custom Color Portland/Lime; Lehigh Portland Cement Co.

- b. Color Mortar Blend: Glen-Gery Corporation.
 - c. Rainbow Mortamix Custom Color Cement/Lime; Holnam, Inc.
 - d. Centurion Colorbond PL; Lafarge Corporation.
 - e. Eaglebond; Blue Circle Cement.
 - f. Riverton Portland Cement Lime Custom Color; Riverton Corporation.
 - g. Approved equal.
- 2. Colored Masonry Cement:
 - a. Magnolia Masonry Cement; Blue Circle Cement.
 - b. Brixment-in-color; Essroc Materials, Inc.
 - c. Rainbow Mortamix Custom Color Masonry Cement; Holnam, Inc.
 - d. Centurion Colorbond; Lafarge Corporation.
 - e. Lehigh Custom Color Masonry Cement; Lehigh Portland Cement Co.
 - f. Coosa Masonry Cement; National Cement Company, Inc.
 - g. Flamingo Color Masonry Cement; Riverton Corporation
 - h. Richcolor Masonry Cement; Southdown, Inc.
 - i. Approved equal.
- 3. Mortar Pigments:
 - a. True Tone Mortar Colors; Davis Colors.
 - b. Centurion Pigments; Lafarge Corporation.
 - c. SGS Mortar Colors; Solomon Grid-Chem Services, Inc.
 - d. Prism Pigments.
- 4. Cold Weather Admixture:
 - a. Accelguard 80; Euclid Chemical Co.
 - b. Morseled; W.R. Grace & Co., Construction Products Division
 - c. Trimix-NCA; Sonneborn, Div. of ChemRex, Inc.
- 5. Water-Repellent Admixture: To be used in all exterior applications – brick, CMU and Arriscraft. Coordinate water repellant admixture used in mortar with water repellant admixture used in masonry units to ensure the same product is used throughout.
 - a. Block Plus W; Addiment, Inc.
 - b. Dry Guard; Krete
 - c. Hydrotite by Tamms Construction Products.
 - d. Euclid Waterpeller.

2.6 EMBEDDED FLASHING MATERIALS

- A. **Metal Flashing:** Fabricate from the following metal complying with requirements specified in Division 7 Section 07900 and below.
 - 1. Copper: 3 oz./sq.ft. weight, coated with asphalt where concealed; uncoated where exposed.
 - 2. Fabricate through-wall metal flashing embedded in masonry from sheet metal indicated above and with ribs at 3" intervals along length of flashing to provide an integral mortar bond.

3. Fabricate metal expansion joint strips from sheet metal indicated above, formed to shape indicated.
 4. Fabricate metal drip edges from sheet metal indicated above. Extend at least 3" into wall and 1/2" out from wall, with a hemmed outer edge bent down 30 degrees.
 5. Fabricate metal flashing terminations from sheet metal indicated above. Extend at least 3" into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4" and then down into joint 3/8" to form a stop for retaining sealant backer rod.
- B. For flashing partly exposed to the exterior, use metal flashing specified above. For flashing not exposed to the exterior, use the following, unless otherwise indicated.
1. Asphalt-Coated Copper Flashing: Manufacturer's standard product consisting of sheet copper coated with flexible asphalt. Use only where flashing is fully concealed in masonry.
 - a. Provide flashing as a complete system with preformed corners, end dams, other special shapes, and seaming materials; all produced by flashing sheet manufacturer.
- C. **Solder and Sealants for Sheet Metal Flashings:** As specified in Division 7 Section - Sheet Metal Flashing and Trim.
- D. **Adhesives, Primers and Seam Tapes for Flashings:** Flashing manufacturer's standard products recommended by the flashing manufacturer for bonding flashing sheets to each other and to substrates.
- E. **Available Products:** Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
1. Metal Flashing:
 - a. Cheney Flashing (Dovetail); Cheney Flashing Company, Inc.
 - b. Cheney Flashing (Sawtooth); Cheney Flashing Company, Inc.
 - c. Keystone 3-Way Interlocking Thruwall Flashing; Keystone Flashing Co.
 2. Asphalt-Coated Copper Flashing:
 - a. Cop-R-Cote; Advanced Building Products, Inc.
 - b. Cop-A-Coat; AFCO Products, Inc.
 - c. H&B C-Coat Flashing; Hohmann & Barnard, inc.
 - d. Type ACC-Asphalt Bituminous Coated; Phoenix Building Products
 - e. Coated Copper Flashing; Polytite Manufacturing Corp.
 - f. Coated Copper Flashing; Sandell Manufacturing Co.
 - g. Copperseal; York Manufacturing, Inc.

2.7 ACCESSORIES

A. Preformed Control Joints:

1. Polyvinyl chloride material. Provide with corner and tee accessories, cement fused joints.

2. Rubber Control Joints: Sized per project conditions; equal to RS Series by Hohmann & Barnard.
 3. Manufacturers:
 - a. Hohmann & Barnard, Model VS-Series.
 - b. Dur O Wal.
 - c. National Wire Products.
- B. **Expansion Joint Filler:** Closed cell neoprene; 3/8" thick.
1. Manufacturers:
 - a. Hohmann & Barnard, Model #NS.
 - b. Dur O Wal, Model D/A.
 - c. National Wire Products, Model 032.
- C. **Expansion Joint Covers** (at interior expansion joints):
1. Manufacturers:
 - a. MM Systems, Model X-K4 to match existing.
 - b. Approved Equals.
- D. **Building Paper:** No. 15 asphalt saturated felt.
- E. **Weeps:** Preformed plastic tubes, cotton wick filled.
1. Manufacturers:
 - a. Hohmann & Barnard, Model 341.
 - b. Dur O Wal.
 - c. National Wire Products, Model 999.
- F. **Cavity Vents:** Insect resistant. Provide in top and bottom of wall at spacing not to exceed 20'-0" cc. Provide Hohmann & Barnard QV Quadro Vent mortar vent.
- G. **Mortar Net:** Provide according to manufacturer's recommendations at all cavity walls. Provide Hohmann & Barnard Mortar Net sized per conditions of the project.
- H. **Cleaning Solution:** Sure-Klean, Vanatrol or equal.

2.8 MASONRY INSULATION

- A. Core Insulation:
1. Insulation shall be Korfil Hi-R Masonry Wall System inserts as produced by Concrete Block Insulating Systems, Inc. The expanded polystyrene insulation shall be individually molded to have a minimum density of 1.3 p.c.f. and shall conform to ASTM C578.

2. Provide and install insulation as recommended by manufacturer. Flame spread not to exceed 25.
3. R-Values based on
80 CBS/cu.ft.
density:

8 in. block -	12.21
10 in. block -	13.92
12 in. block -	14.56

B. Above-Grade Cavity Wall Insulation

1. Styrofoam Cavity Mate Insulation by Dow Chemical Co.
2. Approved equal.

2.10 MASONRY CLEANERS

- A. Job-Mixed Detergent Solution: Solution of 1/2 cup dry measure tetrasodium polyphosphate and 1/2 cup dry measure laundry detergent dissolved in 1 gallon of water.
- B. Proprietary Acidic Cleaner: Manufacturer's standard strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
 1. Available Products: Subject to compliance with requirements, products that may used to clean unit masonry surfaces include, but are not limited to, the following:
 - a. Cleaners for Red and Light-Colored Brick Not Subject to Metallic Staining with Mortar Not Subject to Bleaching:
 - 1) 202 New Masonry Detergent; Diedrich Technologies, Inc.
 - 2) Sure Klean No. 600 Detergent; ProSoCo, Inc.
 - b. Cleaners for Red and Dark-Colored Brick Not Subject to Metallic Staining:
 - 1) 200 Lime Solv; Diedrich Technologies, Inc.
 - 2) Sure Klean No. 101 Lime Solvent; ProSoCo, Inc.
 - c. Cleaners for Brick Subject to Metallic Staining:
 - 1) 202V Vana-Stop; Diedrich Technologies, inc.
 - 2) Sure Klean Vana Trol; ProSoCo, Inc.

2.11 LINTELS

- A. **Precast Concrete Lintels:** See Structural drawings for requirements.

2.12 SEALER

- A. Water Repellant Sealer: Infiniseal DB by W.R. Grace Construction Products.

1. Coordinate water repellant sealer with water repellant admixture used in mortar and masonry units. Provide manufacturer's letter of acceptance for proposed application.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

- A. Verify that field conditions are acceptable and are ready to receive Work.
- B. Coordinate placement of anchors supplied in other Sections.

3.2 COURSING

- A. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- B. **Concrete Masonry Units:**
 1. Bond: Running, and as indicated on drawings.
 2. Coursing: One unit and one mortar joint to equal 16 inches wide and 8 inches high.
 3. Mortar Joints: Standard concave strike joint.
- C. **Brick Units:**
 1. Bond: As indicated on drawings.
 2. Coursing: As indicated on drawings.
 3. Mortar Joints: Standard concave strike joint.
 4. Cut mortar joints flush where ceramic wall tile is scheduled.

3.3 PLACING AND BONDING

- A. Isolate masonry partitions from vertical structural framing members with a control joint. Provide control joints at 30'-0" cc and at building corners and at material transitions.
- B. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with expansion joint filler.

3.4 WEEPS

- A. Install weeps in brick at 16 inches oc horizontally above through-wall flashing, above shelf angles and lintels, at bottom of walls, and at any interruption to the cavity, such as door and window heads, window sills, etc.

3.5 CAVITY WALL

- A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep holes. **Strike joints facing cavities flush.**
- B. Build inner wythe ahead of outer wythe to receive cavity insulation air/vapor barrier adhesive.

3.6 REINFORCEMENT AND ANCHORAGES - CAVITY WALL MASONRY

- A. Install horizontal joint reinforcement 16 inches o.c. Place joint reinforcement at 8" o.c above roof at parapet walls.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Attach anchors to structural steel members. Embed anchorages in every second block and corresponding brick joint.
- D. Reinforce corners and intersections with strap anchors 16 inches oc.

3.7 REINFORCEMENT AND ANCHORAGES- VENEER WALL MASONRY

- A. Anchor single wythe masonry veneer to metal studs with masonry veneer anchors to comply with the following requirements.
- B. Fasten each anchor section through sheathing to metal studs with metal fasteners of type indicated.
- C. Embed tie section in masonry joints. Provide not less than 1 2" air space between back of masonry veneer wythe and face of sheathing.
- D. Locate anchor section relative to course in which tie section is embedded to allow maximum vertical differential movement of tie up and down.
- E. Space anchors as indicated but not more than 16" o.c. vertically and 24" o.c. horizontally. Install additional anchors with 1'-0" of openings and at intervals around perimeter not exceeding 3'-0". Provide anchors at 8" o.c. at parapet walls (above roof).

3.8 MASONRY FLASHINGS

- A. Remove all deleterious materials from surfaces to be flashed. A surface conditioner is required for all dirty or dusty surfaces, or surfaces having rough or irregular texture. Apply conditioner by spray, brush or roller per manufacturer's recommendations.
- B. Extend flashings horizontally at foundation walls, above ledge or shelf angles and lintels, and at bottom of walls.
- C. Turn flashing up minimum 8 inches and bed into mortar joint of masonry back-up. Install end dams at locations where cavity walls terminate.
- D. Lap end joints and seal watertight.
- E. Turn flashing, fold, and seal at corners, bends, and interruptions. Turn up ends of discrete flashings to form a dam.
- F. Seal flashings around all penetrations with mastic, such as at reinforcing steel.
- G. Provide weeps at 32" o.c. max. or as shown on drawings.

3.9 LINTELS

- A. Install loose steel and precast concrete lintels as indicated on Structural drawings.
- B. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled.
- C. Maintain minimum 8 inch bearing on each side of opening.

3.10 GROUTED COMPONENTS

- A. Reinforce bond beam and pilasters as detailed.
- B. Support and secure reinforcing bars from displacement. Maintain position within 2 inch of dimensioned position.
- C. Place and consolidate grout fill without displacing reinforcing.
- D. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.
- E. Fill new hollow metal door frame heads and jambs when installed in masonry walls.

3.11 CONTROL AND EXPANSION JOINTS

- A. Do not continue horizontal joint reinforcement through control and expansion joints.
- B. Install preformed control joint device in continuous lengths. Seal end, butt, and corner joints in accordance with manufacturer's instructions.
- C. Size control joint in accordance with Section 07900 for sealant performance.
- D. Form expansion joint as detailed.

3.12 BUILT-IN WORK

- A. As work progresses, install built-in metal door and window frames, anchor bolts, plates and other items to be built in the work furnished by other Sections.
- B. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

3.13 TOLERANCES

- A. Comply with tolerances in ACI 530.1/ASCE 6/TMS 602 and the following:
- B. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/4" in 20 feet, nor 1/2" maximum.
- C. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4" in 10 feet, nor 1/2" maximum.
- D. For conspicuous horizontal lines, such as exposed lintels, sills, parapets, and reveals, do not vary from level by more than 1/4" in 20 feet, nor 1/2" maximum.

- E. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8" with a maximum thickness limited to 1/2". Do not vary from bed-joint thickness of adjacent courses by more than 1/8".
- F. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8". Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8".

3.14 CUTTING AND FITTING

- A. Cut and fit for chases, pipes, conduit, sleeves, grounds, and duct work. Coordinate with other sections of work to provide correct size, shape, and location.

3.15 CLEANING

- A. Remove excess mortar and mortar smears as work progresses.
- B. Clean soiled adjacent surfaces disturbed by masonry work with appropriate cleaning solution by brush and hand.
- C. Clean brick walls with specified cleaning solution in accordance with manufacturer's recommendations.
- D. Power cleaning is not allowed.

3.16 MASONRY CORE INSULATION

- A. Install according to manufacturer's recommendations.
- B. Ensure entire masonry envelope is insulated. Take whatever means necessary to fill gaps, extensions or recessions in masonry. Repair all damage to wall and leave exposed surfaces in a like-new manner. Ensure masonry cores or cavity drains as intended.

3.17 SEALER

- A. All single wythe exterior exposed CMU is to receive water repellant sealer. Apply water repellant sealer in accordance with manufacturer's installation instructions for either spray, roller or brush application.

END OF SECTION